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NEW HAMPSHIRE COLLEGE

AGRICULTURAL EXPERIMENT STATION

INSPECTION OF FERTILIZERS

IN 1903

In Cooperation with the State Board of Agriculture

ANALYSES OF WOOD ASHES AND MISCEL-LANEOUS FERTILIZING MATERIALS

NEW HAMPSHIRE COLLEGE

OF

AGRICULTURE AND THE MECHANIC ARTS

DURHAM

NEW HAMPSHIRE COLLEGE

OF

AGRICULTURE AND THE MECHANIC ARTS

AGRICULTURAL EXPERIMENT STATION

DURHAM, N. H.

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THE FERTILIZER INSPECTION IN 1903.

In accordance with the Public Statutes, the secretary of the State Board of Agriculture, Hon. N. J. Bachelder, caused to be collected and analyzed samples of all the brands of fertilizers licensed for sale in this state.

The samples were drawn by Percy A. Campbell and Harold N. Knight of the New Hampshire college, and delivered to the chemist of the Agricultural Experiment Station, Fred W. Morse, who was assisted in the analytical work by Lucian A. Hill, Harold H. Scudder, and Warren C. Hayes.

Ninety-three different brands were examined. Of these, nineteen were found to be deficient in their composition; but with the exception of one brand, the deficiency in each case was limited to one constituent, and an excess was usually present in one or more of the other ingredients.

There were five deficiencies in nitrogen, six in potash, and nine in available phosphoric acid. This was slightly more in proportion to the number of brands than in the previous year.

COMPOSITION OF COMMERCIAL FERTILIZERS SAMPLED AND ANALYZED IN 1903.

ısh.	.bə	Guarante	
Potash.		Found.	1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0
	al.	Guaran- teed.	0.0000000000000000000000000000000000000
	Total.	Found.	10.86 10.15 6.30 10.15 10.15 10.20 11.05 1
Acid.		Jusoluble	223 2230 2230 2230 2230 2330 2330 2330
Phosphoric Acid	able.	Guaran- teed.	\$\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Phosp	Available.	Found.	8 50 50 50 50 50 50 50 50 50 50 50 50 50
		Reverted.	8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
		Soluble.	64844444444444444444444444444444444444
	al.	Guaran- teed.	22.5.5.00 2.5.00
gen.	Total	Found.	2.285 2.285 2.285 2.285 2.286 2.286 2.286 2.297 2.207 2.209 3.310 3.010
Nitrogen.	*.oingao		2.77 2.286 2.886 2.886 1.95 1.120 1.122 1.122 1.122 1.123 1.135 1.136 1.
	**	JinsgronI	20 20 20 20 20 20 20 20 20 20 20 20 20 2
		MANUFACTUKEK AND BKAND.	American Agricultural Chemical Co. Bradley's Corn Phosphate. Bradley's Complete Manure for Potatoes and Vegetab's Bradley's Complete Manure for Potatoes and Vegetab's Bradley's Complete Manure with 10 per cent. Potash. Bradley's Complete Manure with 10 per cent. Potash. Bradley's Potato Rertilizer. Bradley's Potato Manure. Bradley's Potato Manure. Bradley's Notato Fertilizer. Clark's Cove Ring Philip's Akaline Guano. Clark's Cove King Philip's Akaline Guano. Clark's Cove Ring Philip's Akaline Guano. Clark's Cove Potato Fertilizer. Cleveland Pertilizer Co. All Grops. Cleveland Superphosphate. Clocker's Corn Phosphate. Crocker's New Rival Amnoniated Superphosphate. Crocker's Potato, Hop, and Tobacco. Crocker's Potato, Hop, and Tobacco. Crocker's Potato, Hop, and Tobacco. Crocker's Potato Pertilizer. Cumberland Guaro Fertilizer. Cumberland Superphosphate. Cumberland Superphosphate. Cumberland Superphosphate. Cumberland Superphosphate. Cumberland Superphosphate. Dariling's Farm Favorite.

508886888888888888888888888888888888888	0.000 0.000 0.000 0.000 0.000 0.000 0.000	2.00
6.6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6.	2.47 2.32 1.97 2.23 2.31 2.79 7.49 9.75	1.86
688888888888888888888888888888888888888	000 000 000 000 000 000 000 000 000 00	12.50
10.30 10.30 11.13 11.13 11.13 11.13 11.13 11.04 11.04 11.04 11.14	10.60 11.00 11.00 11.02 10.65 10.65 11.10 9.18 8.35	14.10
2.2.2.4.1.1.4.5.1.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2	2.20 2.45 1.50 1.95 2.70 3.10 2.20 1.90	2.65
899999999999999999999999999999999999999	88.80 10.80 10.90 10.90 10.90 10.90 10.90	10.50
7.6.8.8.7.0 6.4.4.9.9.7.0 6.4.4.9.9.9.7.0 6.4.4.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.	8.40 8.55 9.50 9.07 7.95 8.00 6.98	11.45
89.8 8.1 8.4 4.2 8.9 2.2 2.4 4.8 8.9 2.4 4.4 2.4 4.5 8.9 2.5 2.5 8.9 2.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8	2.05 2.35 2.37 2.37 2.348 2.05	2.60
444664866864466688644418666468	5.40 6.60 6.70 6.70 8.95 4.80 4.40	8.85
8458 992498 999898 99888 99888 99888 99888 99888 99888 99888 9888	2.50 2.50 3.00 3.00	:
22.22.23.33.33.33.33.33.33.33.33.33.33.3	1.74 1.57 2.30 1.67 1.64 1.02 3.14	
2.22 2.27 2.27 2.27 2.20 2.04 2.04 2.04 2.04 2.04 2.04 2.04	1.74 1.57 1.67 1.64 1.02 2.35	
9.74 9.74 9.74 9.74 9.74 9.74 9.74 9.74	.74	
Darling's New Hampshire Special Carat Eastern Gardera Special Great Eastern Gardera Special Great Eastern Gardera Special Great Eastern Grass and Oats Fertilizer Great Eastern Grass and Oats Fertilizer Great Eastern Northern Corn Special Great Eastern Northern Corn Special Eacker's Union Animal Corn Fertilizer Facker's Union Animal Corn Fertilizer Packer's Union Animal Corn Fertilizer Packer's Union Manure. Packer's Union Universal Fertilizer Packer's Union Wheat, Oats, and Clover Fertilizer Quinnipiac Climax Phosphate for All Crops Quinnipiac Potato Phosphate Read's Framers' Friend Read's Framers' Friend Read's Standard Superphosphate Read's Standard Superphosphate Soluble Pacific Guano Williams & Clark's Americus Corn Phosphate Williams & Clark's Americus Corp Producer Williams & Clark's Prolific Crop Producer	Bowker's Corn Phosphate	E. Frank Coe's High Grade Diss. Bone and Potash

COMPOSITION OF COMMERCIAL FERTILIZERS SAMPLED AND ANALYZED IN 1903.—Continued.

		Nitrogen.	gen.			H	hosp	Phosphoric Acid	Acid.			Potash.	ısh.
divided divided and and and and and and and and and an	**		Total.	al.			Available.	able.		Total.	al.		·p·
MANOFACIORER AND BRAND.	oinsgronl	*.oinsgrO	Found.	Guaran- teed.	Soluble.	Reverted.	Found.	Guaran- teed.	.əldulosnI	Found.	Guaran- teed.	Found.	Guarantee
Grass and Grain Special. Columbian Corn Fertilizer. High Grade Ammoniated Bone Superphosphate. Celebrated Special Potato Fertilizer. New England Potato Fertilizer. XXV Ammoniated Bone Superphosphate		1.25 1.29 1.39 1.71 1.18	1.25 1.29 1.90 1.34 1.71 1.13	82.2.2.8.	7.10 6.95 7.40 7.20 7.05 4.80 6.70	2.55 2.15 1.95 1.95 3.00 2.45	9.65 9.10 9.35 9.15 8.70 7.80	8.50 8.50 8.50 8.50 8.50	2.35 2.30 1.80 2.20 2.75 2.75 2.45	12.60 12.00 11.15 11.35 11.35 11.45 10.50	0.01 0.02 0.03 0.03 0.03 0.03 0.03 0.03 0.03	2.43 2.59 2.51 2.49 3.94 3.53 2.07	22-24-6-1-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5
Lister's Bone and Potash Lister's High Grande Special Lister's Potatio Manure. Lister's Special Corn. Lister's Success Fertilizer. Special Potato.	1.53	1.07 1.59 .90 1.30	1.66 3.12 1.60 1.30 1.54	3.85	5.75 3.65 2.90 6.00 5.65	4.45 4.05 2.95 2.65	10.20 7.70 7.45 8.95 9.20 8.30	0000000	1.80 3.15 3.00 2.00 2.15	12.00 10.85 10.45 10.95 12.05 10.45	110.0010 0000000	2.32 10.37 6.53 3.00 2.11 3.04	10.00 1.00 3.00 3.00
Lowell Bone Fertilizer for Corn and Grain Swift's Lowell Animal Brand Swift's Lowell Potato Manure Swift's Lowell Potato Phosphate. New England Fertilizer Co.	.59	1.89 1.85 1.70 2.37	1.89 2.44 1.70 2.37	1.64 2.46 1.64 2.47	6.65 7.80 4.90	2.70 .85 3.15 3.45	9.35 8.65 8.35	8.00 8.00 8.00	.90 1.75 1.40 1.70	10.25 10.40 9.15 10.05	90000	2.74 4.27 4.11 5.97	66.449 886.69
New England Corn Phosphate		1.48	1.48 1.64	1.64	3.25	5.03	8.27	8.00	1.97 10.24	10.24	9.00	2.38	3.00

New England Potato Fertilizer	:	1.87	1.87	1.64	2.00	2.30	7.30	7.00	1.50	8.80	8.00	3.82	4.00
OHIO FARMERS' FERTILIZER CO.													
Corn, Oats, and Wheat, Fish Guano	.38	.97 .85 1.67	1.35 .85 1.88	1.28	5.40 1.25 4.95	3.35 5.90 4.50	8.75 7.15 9.45	8.00 7.00 8.00	2.50 2.75 2.15	11.25 9.90 11.60	0.80 0.00 0.00	2.92 1.84 4.52	2.00 1.00 4.00
PARMENTER & POLSEY FERTILIZER CO.													
P. and P. Potato Plymouth Rock Brand Special Potato Fertilizer Star Brand Superphosphate.	.08	1.71 2.62 2.67 1.68	2.70 3.34 1.68	1.60 2.47 3.30 1.04	2.25 4.70 5.45 3.30	4.80 4.80 4.30	7.05 9.50 8.55 7.60	6.00 8.00 7.00	2.20 1.85 .55 2.50	9.25 11.35 9.10 10.10	9.00	6.31 3.80 7.95 3.48	6 00 7.00 2.50
RUSSIA CEMENT CO.													
Essex A1 Superphosphate Essex Complete Manure for Corn, Grain, and Grass Essex Complete Manure for Potatoes, Roots, and Veg's Essex Corn Ferlizer. Essex Market Garden and Potato Essex XXX Fish and Potato	.46 .70 .65	1.01 2.67 3.00 2.19 1.64 2.34	1.01 3.13 3.70 2.19 2.29 2.41	2.00 2.00 2.00 2.00	2.30 4.40 4.40 2.85 3.95 2.65	2.69 3.00 4.35 5.29 6.40	4.99 7.40 8.75 8.15 9.05	9.00000	6.26 4.15 3.55 5.51 4.45	11.25 11.55 12.30 13.65 13.50	9.00 10.00 12.00	2.08 10.37 8.19 3.41 5.96 2.70	2.50 2.50 2.50 2.50
ABBOTT & MARTIN RENDERING CO.													
Abbott's Tobacco and Potato Special	.72	.56	1.28	1.64	4.40	4.10	8.50	8.00	2.90	11.40	10.00	3.32	2.00

*Inorganic nitrogen is contained only in nitrates and ammonia salts, i.e., nitrate of soda and sulphate of ammonia. It is the immediately available nitrogen. Organic nitrogen is the nitrogen contained in animal and vegetable matter, and is available in proportion to the rapidity of decay of the substances containing it.

ANALYSES OF WOOD ASHES AND CHEMICALS. WOOD ASHES—FOUR SAMPLES.

LOCALITY.	Moisture.	Soluble potash.	Total phosphoric acid.	Lime.
Peterborough	15.00	3.78	1.34	
Pittsfield	21.00	5.65	1.42	
Lancaster		3.20	1.50	26.46
Dover	23.75	3.48	2.90	

NITRATE OF SODA-TWO SAMPLES.

From Laconia, 15.93 per cent. nitrogen. From College Farm, 15.60 per cent. nitrogen.

SUPERPHOSPHATES-TWO SAMPLES.

Dissolved boneblack from Littleton. Plain superphosphate from Laconia.

	Dissolved Boneblack.	Plain Superphosphate.
Soluble phosphoric acid,	15.90	9.35
Reverted phosphoric acid,	1.25	4.15
Available phosphoric acid,	17.15	13.50
Insoluble phosphoric acid,	1.85	3.20
Total phosphoric acid,	19.00	16.70

But one of the lots of wood ashes could be considered really good, on account of the comparatively low soluble potash. The nitrate of soda and superphosphates were of standard quality.

FRED W. MORSE, Chemist.

TRADE VALUES OF FERTILIZING INGREDIENTS IN RAW MATERIALS AND CHEMICALS, 1903.

							C	ents per pound.
Nitrogen i	n ammor	nia sal	ts					17.5
"	nitrate	s						15.
6.6	dry and	d fine	grour	nd fis	h, me	at, a	nd	
	bloo	d, and	l in h	nigh :	grade	mix	ced	
	ferti	lizers						17.0
"	fine gr	ound l	bone	and t	ankaş	ge		16.5
66	mediu	m gro	und b	one	and ta	inka	ge,	12.0
Phosphoric	c acid so	luble i	in wa	ter				4.5
66	4.4	66	am	moni	ia citr	ate (re-	
			1	verte	d)			4.0
6.6	" in	fine	groun	id bo	one, fi	sh, a	ınd	
		tanka	ge					4.
66	" in	coarse	e bon	e and	l tank	age		3.
6.6	" in	cotton	-seed	mea	l, cast	or-p	om-	
		ace, a	nd w	ood a	ashes			4.
"	" ins	soluble	e in n	nixed	fertil	izers		2.
Potash as	sulphate	free	from	chlo	rides	and	in	
wood	ashes							5.
Potash as	muriate							4.25

The above values are based on the wholesale market price for the materials, when sold in large lots at the principal trade centers in New England. The valuation of a ton of any mixed fertilizer based on the above figures will usually fall ten dollars below the retail price at the local agency. This variation includes such fixed charges as cost of mixing, bags, cartage, and freight, salaries and commissions of agents, and interest.

Nitrogen in the best animal fertilizers and in nitrates cost more in 1903 than in the previous year, while phosphoric acid was cheaper.

STATE OF NEW HAMPSHIRE.

CHAPTER 43, SESSION LAWS OF 1901.

AN ACT TO REGULATE THE SALE OF FERTILIZERS.

SECTION 1. Every lot or parcel of commercial fertilizer or fertilizer material sold or offered or exposed for sale within this state shall be accompanied by a plainly printed statement, clearly and truly certifying the number of net pounds of fertilizer in the package, the name, brand, or trademark under which the fertilizer is sold, the name and address of the manufacturer or importer, the location of the factory, and a chemical analysis stating the percentage of nitrogen, of potash soluble in distilled water, of phosphoric acid in available form soluble in distilled water, and reverted, and of total phosphoric acid.

SECT. 2. Before any commercial fertilizer is sold or offered or exposed for sale, the manufacturer, importer, or party who causes it to be sold or offered for sale, within this state, shall file with the secretary of the board of agriculture a certified copy of the statement named in section I of this act, and shall also deposit with said secretary, at his request, a sealed glass jar or bottle containing not less than one pound of the fertilizer, accompanied by an affidavit that it is a fair average sample thereof.

SECT. 3. The manufacturer, importer, agent, or seller of any brand of commercial fertilizer or fertilizer material shall pay for each brand on or before the first day of March, annually, to the secretary of the board of agriculture, an analysis fee, as follows, namely: ten dollars for the phosphoric acid, five dollars for the nitrogen, and five dollars for the potash, contained or claimed to be in the said brand of fertilizer, but the fee for any brand shall not exceed fifteen dollars; provided, that whenever the manufacturer or importer shall have paid the fee herein required, any person acting as agent or seller for such manufacturer or importer shall not be required to pay the fee named in this section.

SECT. 4. No person shall sell or offer or expose for sale in this state any pulverized leather, hair, or wool waste, raw, steamed, roasted, or in any form as a fertilizer, without an explicit printed certificate of the fact conspicuously affixed to every package of such fertilizer.

SECT. 5. Any person selling or offering or exposing for sale any commercial fertilizer without the statement required by the first section of this act, or with a label stating that said fertilizer contains a larger percentage of any one or more of the constituents mentioned in said section than is con-

tained therein or respecting the sale of which all the provisions of the foregoing sections have not been fully complied with, shall forfeit fifty dollars for the first offense and one hundred do lars for each subsequent offense.

SECT. 6. This act shall not affect parties manufacturing or importing fertilizer for their own use and not to sell in this state.

SECT, 7. The secretary of the board of agriculture shall annually cause to be analyzed at the New Hampshire College Agricultural Experiment Station one or more samples of every commercial fertilizer or fertilizer material sold or offered for sale under the provisions of this act. Said secretary shall cause a sample to be taken, not exceeding two pounds in weight, for said analysis, from any lot or package of such fertilizer or fertilizer material, which may be in the possession of any manufacturer, importer, agent, or dealer in this state; but said sample shall be drawn in the presence of the parties in interest or their representatives and taken from a parcel or a number of packages, which shall not be less than ten per cent. of the whole lot sampled, and shall be thoroughly mixed and then divided into equal samples and placed in glass vessels and carefully sealed and a label placed on each, stating the name or brand of the fertilizer or material sampled, the name of the party from whose stock the sample was drawn, and the time and place of drawing, and said label shall also be signed by the person taking the sample and by the party or parties in interest, or their representative present at the drawing and sealing of said samples; one of said duplicate samples shall be retained by the secretary and the other by the party whose stock was sampled; and the sample retained by the secretary shall be for comparison with the certified statement named in section 1. The result of the analysis of the samples shall be published from time to time. together with such additional information as circumstances may advise, in reports or bulletins by the New Hampshire College Agricultural Experiment Station and in the biennial report of the state board of agriculture. All parties violating this act shall be prosecuted by the secretary of the board of agriculture.

SECT. 8. The amount of license fees received by said secretary by virtue of this act shall be paid by him to the treasurer of the state of New Hampshire. The treasurer of the state of New Hampshire shall pay from such amount, when duly approved, the moneys required for the expense incurred in making the inspection required by this act and enforcing the provisions thereof. Said expense shall include those incurred for laboratory expenses, chemical supplies, traveling expenses, printing, and other necessary matters.

SECT. 9. This act shall take effect July first, nineteen hundred and one, and all acts and parts of acts inconsistent with this act are hereby repealed.







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